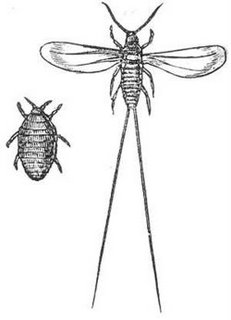
**Lesson Plan: **[**A Course in Natural Dyeing**](http://sanguinegryphon.blogspot.com/2006/07/course-in-natural-dyeing.html)  
  
Cochineal dye comes from the cochineal insect, native to tropical and subtropical South America and Mexico and has been used for creating beautiful, lightfast and permanent scarlet, pinks and reds for centuries. Cochineal was so important that Moctezuma levied an annual tribute of cochineal dye in the 15th century and cochineal was Mexico’s second most valuable export after silver. The Aztecs used cochineal for dyeing and actually farmed them, breeding to get more intense coloring. When the Spaniards came along they found the color better than anything known in Europe and it became an immensely valuable export.   


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|  | Cochineal was introduced into Europe by the Spanish in the 1500s and very rapidly became the dye of choice for expensive but desirable scarlet and red clothes for kings and nobles, supplanting the European dye products then in use. Cochineal was replaced by synthetic dyes during the 1800s but is now seeing a pronounced resurgence of interest, with the increased use of non-synthetic, natural dyes. | |
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|  | | http://www.cochinealdye.com/assets/images/autogen/clearpixel.gif |
|  | Crushed female cochineal insects produce a deep crimson dye that can be used to produce  a range of scarlet, red, pink and orange hues. Only the females can produce this red carminic acid,  which is used to deter predators.  Cochineal has been used traditionally to dye textiles and produces intense colors with wool  fibers but it has also been used on cotton, agave and other fibers. In Mexico it still used to  dye traditional woolen and cotton textiles.  The Cochineal bugs live and feed on the Prickly Pear. Cochineal is used as a natural food coloring.  It takes approximately 70,000 cochineal bugs to make one pound of cochineal dye. | |
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| http://www.knitty.com/ISSUEfall09/images/cochBUGS.jpg http://www.knitty.com/ISSUEfall09/images/cochALUM.jpghttp://www.knitty.com/ISSUEfall09/images/cochADDDYE.jpg  http://www.knitty.com/ISSUEfall09/images/cochDYEPOT.jpg http://www.knitty.com/ISSUEfall09/images/cochRINSING.jpg http://www.knitty.com/ISSUEfall09/images/cochDYEDITEMS.jpg |
| **Materials: cochineal bugs, pestle and mortar, spoons, cups, water, magnifying glass, white fabric** |

1. Give each student a cochineal bug and magnifying glass and ask them to think about what it is.
2. Ask for thoughts; do not give answer.
3. Caution: This stuff is a dye. Clothing precaution! Place 1 spoonful of cochineal bugs in the pestle and add a little water and use the Mortar to crush.
4. Ask students for their thoughts now.
5. Give answer and read the article and show pictures.
6. Show and discuss with the students the Codex of the Aztecs. A codex is a [books](http://en.wikipedia.org/wiki/Book) written by [pre-Columbian](http://en.wikipedia.org/wiki/Pre-Columbian) and colonial-era Aztecs that improved the use of scrolls. These codices provide some of the best primary sources for [Aztec](http://en.wikipedia.org/wiki/Aztec) culture. See how the cochineal bug was worth the price of gold. Also note that the British dyed their red coats red using cochineal bugs up to 30 years ago (El Niño washed off many cactus and destroyed many cochineal, therefore driving up the price). You can also find products such as Revlon makeup and fruit drinks still using cochineal.
7. Have student dye a piece of fabric red using the red juice of the dead female bug.

\*Science application: Ask students:

1. How is the cochineal a parasite? It feeds off of the Prickly pear cactus.
2. Why would people use cochineal bugs versus Red Dye No 15 (synthetic)? Some people do not trust chemicals and prefer natural substances.
3. Why do companies add red food coloring to foods? To make them look more appetizing. They make strawberries redder and cereal brighter.